



DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
WASHINGTON, DC 20350-2000

IN REPLY REFER TO  
OPNAVINST 9221.1B  
OP-03B  
22 August 1990

OPNAV INSTRUCTION 9221.1B

From: Chief of Naval Operations

Subj: U.S. NAVY STEAM GENERATING PLANT INSPECTION AND INSPECTOR  
TRAINING AND CERTIFICATION PROGRAM

Ref: (a) Naval Ships' Technical Manual Chapter 221 Boilers  
(S9086-GY-STM-010)

Encl: (1) Steam Generating Plant Inspector (SGPI) Training and  
Certification Requirements  
(2) Certified Industrial Boiler Inspector (CIBI) Training  
and Certification Requirements  
(3) Boiler Inspection Scheduling and Inspection Responsibility

1. Purpose. To establish training and certification guidelines for all Steam Generating Plant Inspectors (SGPIs) and Certified Industrial Boiler Inspectors (CIBIs) employed by the U. S. Navy, and to establish policy for the inspection requirements of all conventional steam generating plants. This instruction has been substantially revised and should be read in its entirety.

2. Cancellation. OPNAVINST 9221.1A.

3. Discussion. A formal program was established in 1967 to provide for routine inspections of all conventional steam generating plants (afloat and school engineering training sites ashore) by qualified Steam Generating Plant Inspectors (SGPIs). Additionally, there is a need for systematic industrial inspections by qualified Certified Industrial Boiler Inspectors (CIBIs) of all conventional steam generating plants (afloat and school engineering training sites ashore) which involve areas not normally covered by SGPIs. The training and certification of all SGPIs and CIBIs must, therefore, be closely monitored and standardized to ensure that all Navy steam generating plants receive professional inspections. Enclosures (1) and (2) delineate the specific requirements for the training and certification of U.S. Navy SGPIs and CIBIs, respectively. Emphasis at all levels of command is required to achieve the desired standards and to improve overall fleet readiness.



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4. Policy. All U.S. Navy conventional main propulsion boilers, auxiliary boilers, and waste heat boilers will be given periodic standardized routine inspections by certified SGPIs and standardized industrial repair inspections by certified CIBIs. In no case shall the interval between routine inspections of an active ship exceed 24 months, nor shall the interval between strength and integrity inspections required by reference (a) of an operating ship (active and NRF) exceed 72 months. Operating ships should not open boilers and machinery for a routine or industrial inspection more often than necessary and should endeavor to coordinate inspections to minimize openings. Therefore, to the greatest extent practical, all other inspection and maintenance actions (which require boiler disassembly) shall be scheduled to coincide with the inspections required by this instruction.

5. Inspection Requirements. All conventional main propulsion boilers, auxiliary boilers, and waste heat boilers shall be inspected and reports of all boiler inspections shall be documented in the Boiler Inspection and Repair Management Information System (BIRMIS) on the following occasions:

a. Periodically by a certified SGPI. The normal interval between routine boiler inspections shall be 18 months. To provide scheduling flexibility, boiler inspections may be performed as early as 12 months or as late as 24 months after the previous inspection. Type Commanders may approve extensions beyond 18 months for ships on extended deployment (four months or more) to permit inspection upon their return. Such extensions shall not result in the inspection interval exceeding 24 months.

b. Prior to the delivery of a newly constructed ship. The acceptance inspection shall be conducted by a Naval Ship Systems Engineering Station (NAVSESSES) CIBI with the cognizant Type Commander (TYCOM) SGPI. The inspection may be conducted in conjunction with the open-and-inspect phase of the Board of Inspection and Survey (PRESINSURV) acceptance trials.

c. Periodically, by a certified NAVSESSES CIBI. The normal interval between strength and integrity inspections shall be 60 months. To provide scheduling flexibility, boiler strength and integrity inspections may be performed as early as 48 months or as late as 72 months after the last strength and integrity inspection. In no case, shall strength and integrity inspections exceed 72 months since the last inspection. (TYCOM SGPIs are required to participate in the inspection.)

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d. Prior to and during each Chief of Naval Operations (CNO) scheduled availability and/or overhaul. Such inspections shall be performed by a NAVSSES CIBI with the cognizant Supervisor of Shipbuilding, Conversion and Repair (SUPSHIP) /Shipyard CIBI accompanying (TYCOM SGPIs are required to participate in the inspection). The inspections shall be accomplished to define boiler repairs and work specifications and monitor work progress and quality:

(1) For CNO scheduled depot level overhauls, all conventional boilers require a Start of Overhaul Inspection (SOI) including a strength and integrity inspection with follow-on Industrial Support Visits (ISV) and a Completion of Overhaul Inspection (COI). In some cases, a Pre-Start of Overhaul Inspection (PSOI) is also required for early Bid Specification development. The COI will be conducted by the same CIBI and attended by the same SGPI who participated in the SOI/PSOI, to the maximum extent possible.

(2) For CNO scheduled depot level availabilities, boilers designated for repair require an industrial boiler survey (PSAI, WPD, etc.) prior to actual availability and a follow-on Start of Availability Inspection (SAI) including strength and integrity inspection, Industrial Support Visits (ISV) and a Completion of Availability Inspection (CAI) during the availability period. The CAI will be conducted by the same CIBI and attended by the same SGPI who participated in the SAI/PSAI, to the maximum extent possible.

e. Prior to the inactivation or reactivation of each ship. This inspection shall be conducted on all boilers by a NAVSSES CIBI with the cognizant TYCOM SGPI and SUPSHIP/Shipyard CIBI accompanying.

f. To reduce the number of boiler openings, Type Commanders may utilize PSAI, SAI, CAI, PSOI, SOI, or COI inspections, which are documented in BIRMIS, as the pressure vessel portion of a routine 18-month boiler inspection.

g. Enclosure (3) provides a summary of the boiler inspections, inspection interval, command responsible for scheduling the inspection, and command responsible for conducting the inspection.

## 6. Action

### a. Commander, Naval Sea Systems Command shall:

(1) Provide the overall management of the SGPI and CIBI programs.

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(2) Ensure that semi-annual Steam Generating Plant Inspector (SGPI) Seminars are conducted at alternating coast locations. Seminars are to include discussion of current inspection criteria, procedures, and problems. Feedback from attendees is of critical importance and ensures that the SGPI and CIBI programs remain current, accurate, and consistent with each other.

(3) Ensure that periodic technical audits are performed at the Steam Generating Plant Inspector Training Course to ensure it is technically accurate and adequate.

(4) Identify those Naval Shipyards/SUPSHIPS which have inspection responsibilities, maintain a base of certified CIBIs within those activities, and ensure that each CIBI report is recorded in BIRMIS.

(5) Maintain rosters of all certified SGPIs by name, rating, command, and date of certification.

(6) Ensure that certified SGPIs maintain current certifications as listed in enclosure (1). Revoke the certification of those SGPIs failing to comply with the requirements.

(7) Ensure that the requirements for Steam Generating Plant Inspector certification, recertification, and certification extensions are met prior to final approval.

b. Commander, Naval Sea Systems Command acting through Naval Ship Systems Engineering Station shall:

(1) Provide technical management of the SGPI and CIBI program. Ensure that the required technical documentation to support the subject program is maintained current.

(2) Establish and monitor the requirements and standards for routine and industrial inspections of shipboard steam generating plants. All inspection reports will be entered into the BIRMIS.

(3) Develop, implement and maintain a program to train and certify CIBIs.

(4) Ensure that timely inspections of new ships and ships undergoing major overhaul and/or conversion are conducted under this instruction.

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(5) Conduct the periodic technical audits at the Steam Generating Plant Inspector Training Course to ensure it is technically accurate and adequate.

(6) Issue the CIBI training course plan, course material, and training aids for all activities authorized to conduct CIBI training.

(7) Provide technical management of the Boiler Inspection and Repair Management Information System (BIRMIS).

(8) Establish, chair, and maintain the CIBI Board to determine the following:

(a) Each CIBI candidate's eligibility and training required for certification. Certify candidate determined to meet requirements without additional training.

(b) Eligibility for reinstatement of CIBIs whose certification has expired or been revoked.

(c) When revocation of certification is required for CIBIs who fail to maintain currency, as defined in enclosure (2).

(9) Maintain rosters of all certified CIBIs by name, rating, command and date of certification.

(10) Monitor and ensure that CIBIs maintain current certification as specified in enclosure (2).

c. Fleet Commanders In Chief shall:

(1) Identify and designate those fleet activities which have inspection responsibilities and maintain a base of certified SGPIs within those activities.

(2) Review the guidelines and inspection requirements for all boiler inspections required by this instruction and ensure that each inspection report is recorded and updated in BIRMIS.

(3) Schedule and coordinate inspections of all steam generating plants required by this instruction with the appropriate technical activities to avoid unnecessary openings of boilers.

(4) Ensure the availability of "school ships" to support SGPI/CIBI training. Student certification must be conducted on "D" type boilers with automatic boiler controls.

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(5) Ensure that the certification of SGPI's who fail to comply with the requirements listed in enclosure (1) are suspended.

(6) Ensure administration and control of the TYCOM-administered pretest.

(7) Host the semi-annual Steam Generating Plant Inspector (SGPI) seminars on an alternating coast basis.

d. Chief of Naval Education and Training shall:

(1) Be responsible for the overall training of SGPIs to include:

(a) Designation of activities authorized to conduct SGPI training.

(b) Final approval of the SGPI training course plan, course materials, and training aids for SGPI training course.

(c) Training of SGPI instructors, ensuring that they are experienced SGPIs.

e. Chief of Naval Personnel, acting through Commander, Naval Military Personnel Command shall:

(1) Ensure that all enlisted personnel assigned to SGPI instructor of CIBI training course billets hold Navy Enlisted Classification BT 4503 and are currently certified SGPIs.

(2) Assign sufficient numbers of personnel to the SGPI course to fulfill billet requirements.

7. Report. The reporting requirements contained in this directive are exempt from reports control by SECNAVINST 5214.2B.



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Steam Generating Plant Inspector (SGPI)  
Training and Certification Requirements

1. Training. All SGPI candidates must satisfactorily complete the four week SGPI course (K-651-2151) taught at Fleet Training Center, San Diego. The following prerequisites are required for attendance at the course:

a. All candidates

(1) Current certification in Boiler Water/Feedwater Test and Treatment (Supervisor's Course, A-651-0115).

(2) Satisfactory completion of either the General Regulator (A-651-0040) or Hagan (A-651-0041) Automatic Boiler Control Maintenance Course within the previous 36 months.

(3) Completed an under instruction annual boiler inspection observed by a certified SGPI within a year prior to commencement of the certification course and will have received satisfactory remarks as to the potential to be an SGPI in the BIRMIS report.

(4) Pass a pre-test developed by the SGPI training school and administered by a TYCOM designated representative within one year prior to the commencement of the certification course. Re-tests may not be administered within six months of a prior test failure. Tests will indicate the individual's level of knowledge in areas of boiler theory, mechanics, boiler water chemistry, ACC systems, and the ability to diagnose/troubleshoot boiler problems.

(5) Physical capability of entering boiler steam and water drums, and the uptakes and stacks.

b. Additional experience prerequisites

(1) Officer - Engineering background with a minimum of two years shipboard conventional steam propulsion engineering department experience.

(2) Enlisted - E7 through E9 Boiler Technician with a minimum of one year fireroom supervisory experience.

(3) Civilian - Five years experience in marine propulsion boiler operation, maintenance or inspections.

Enclosure (1)



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2. Certification

a. Initial Certification. Fleet Training Center, San Diego issues an initial 36 month certification to graduates of the SGPI course (K-651-2151).

b. Maintaining Certification. All SGPIs must maintain currency in knowledge of approved boiler inspection practices and policies. Certification will be revoked for those SGPIs who fail to comply with the following:

(1) In each calendar year attendance at one of the semi-annual Steam Generating Plant Inspector (SGPI) seminars. For SGPIs forward deployed or stationed overseas, attendance at one of three consecutive seminars every 18 months is the minimum requirement.

(2) Maintain a current certification in Boiler Water/Feedwater Test and Treatment.

(3) Conduct at least one steam generating plant inspection every nine months. The interval between boiler inspections may not exceed 12 months.

c. Extending Certification. Currently certified SGPIs may request to extend their initial 36 month certification, in 36 month increments, provided the requirements in paragraph 2b above are met.

(1) Extension requests must be submitted in writing to Commander, Naval Sea Systems Command (SEA 56P) via the SGPI's Commanding Officer; Squadron Commander; Type Commander; and Commanding Officer, Naval Ship Systems Engineering station (Code 022), Philadelphia, PA 19112-5083.

(2) The commanding officer must certify that the SGPI currently meets all requirements defined in paragraph 2b. The request must also include a brief description of the SGPI's duties during the previous certification period.

d. Reinstatement of an Expired/Revoked Certification. An expired or revoked certification may only be reinstated within 6 months following expiration of the latest 36 month certification period. Former SGPIs who fail to have their certifications reinstated within the 6 month time period must re-attend and pass the 4 week SGPI course (A-651-2151).

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(1) Reinstatement requests must be submitted in writing to Commander, Naval Sea Systems Command (SEA 56P) via the SGPI's commanding officer; squadron commander; Type Commander; and Commanding Officer, Naval Ship Systems Engineering station (Code 022), Philadelphia, PA 19112-5083. The letter requesting reinstatement should specify the date of the seminar attended, and the name, hull number, boiler designation and dates of inspection of the last ship inspected.

(2) Additionally, the commanding officer's endorsement will confirm compliance with the requirements specified in paragraphs 2b(1) and 2b(2) above, and must verify that the former SGPI has inspected two boilers under the supervision of a currently certified SGPI within the 6 month period following the certification expiration or revocation.

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Certified Industrial Boiler inspector (CIBI)  
Training and Certification Requirements

1. Training. All CIBI candidates must satisfactorily complete the CIBI certification course taught at Naval Ship Systems Engineering Station Philadelphia, PA.

a. Prerequisites

(1) A minimum of 7 years of general marine propulsion boiler experience in operations, maintenance, repair or inspection. A bachelor's/master's degree in mechanical or marine engineering may be substituted for 3 years of experience. However, no amount of education will substitute for more than 3 years of experience.

(2) A minimum of 2 of the 7 years of experience will be specialized marine propulsion maintenance or repair experience at the engineer, technician, planner, designer, boilermaker foreman, quality assurance, Readiness Support Group, Ship Intermediate Maintenance Activity, or Supervisor of Shipbuilding, Conversion and Repair (SUPSHIP) level. A bachelor's/master's degree in mechanical or marine engineering may be substituted for 1 year of specialized experience.

(3) Qualification in level II nondestructive testing in magnetic particle (MT) and liquid penetrant (PT) methods per MIL-STD-271 (Nondestructive Testing Requirements for Metals) (NOTAL).

(4) Physical capability of entering boiler steam and water drums, the uptakes and stacks.

(5) A written recommendation from the candidate's employer verifying the candidate's experience level and familiarity with Naval Ships' Technical Manual Chapter 221 (Boilers), the Boiler Repair Manual (NAVSEA S9221-C1-GTP-010), and the Boiler Inspection Manual (NAVSEA S9221-D2-MMA-010).

(6) Satisfactory completion of the pressure vessel portion, weeks number 1 through 3, of the SGPI course (A-651-2151).

b. Final acceptance of a candidate's eligibility to be a certified CIBI will be made by the CIBI Board. The board will be chaired by NAVSSES (Code 022), and include two representatives each from NAVSEA 56P, SUPSHIP and Naval Shipyards. (Total seven board members).

Enclosure (2)

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2. Certification

a. Initial Certification. NAVSSES issues an initial 36 month certification to graduates of the CIBI certification course.

b. Maintaining Certification. All CIBIs must maintain currency in knowledge of approved boiler inspection and repair practices and policies. Certifications will be revoked for those CIBIs who fail to comply with the following:

(1) Either attendance at one of the semi-annual Steam Generating Plant Inspector (SGPI) seminars each year or conduct at least one industrial boiler inspection annually.

c. Reinstatement of an Expired/Revoked Certification. An expired or revoked certification may only be reinstated within 2 years following either expiration or revocation due to failure to meet the requirements defined in paragraph 2b. Former CIBIs who fail to have their certifications reinstated within the 2 year time period must re-attend and pass the NAVSSES CIBI certification course.

(1) Reinstatement requests must be submitted in writing to Commanding Officer, Naval Ship Systems Engineering Station (Code 022) Philadelphia, PA 19112-5083 via the CIBI's commanding officer, Type Commander and Commander, Naval Sea Systems Command (SEA 56P), for consideration by the CIBI Board.

(2) Additionally, the employer's endorsement will confirm compliance with the requirements specified in paragraphs 2b (1) above, and will verify that the former CIBI has inspected at least one boiler under the supervision of a currently certified CIBI within the 6 month period preceding the date of the reinstatement request. The former CIBI's inspection report will be included as an enclosure to the reinstatement request.

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## Boiler Inspection Scheduling And Inspection Responsibility

<u>Type Inspection</u>	<u>Schedule Date</u>	<u>Scheduling Responsibility</u>	<u>Responsibility for Inspections</u>
(1) Routine*	Once every 18 Months.	Cognizant IUC	Cognizant TYCOM SGPI
(2) Pre-Start of Availability Inspection (PSOI/PSAI)	Schedule PSAI in conjunction with routine boiler appraisal 8-12 months prior to availability.	IUC (Coordinate with PERA, READSUPPGRU)	NAVSSSES CIBI and cognizant TYCOM SGPI
(3) Start of Availability (SOI/SAI)	At start of ROM/PMA/SRA in conjunction with strength and integrity inspection.	NAVAL SHIPYARD or SUPSHIP	NAVSSSES CIBI and cognizant TYCOM SGPI
(4) Industrial Support Visit (ISV)**	During ROH/PKA/SRA.	NAVAL SHIPYARD or SUPSHIP	NAVSSSES CIBI and cognizant TYCOM SGPI
(5) Completion of Availability (COI/CAI)	To be conducted before reassembling boiler for final hydrostatic test.	NAVAL SHIPYARD or SUPSHIP	NAVSSSES CIBI and cognizant TYCOM SGPI
(6) Newly constructed ship	In conjunction with INSURV during Acceptance Trials. Starts routine inspection requirements.	NAVAL SHIPYARD or SUPSHIP	NAVSSSES CIBI and cognizant TYCOM SGPI
(7) Inactivation or Reactivation.	Prior to final action.	NAVAL SHIPYARD, SUPSHIP or INACTSHIPFAC	NAVSSSES CIBI and cognizant TYCOM SGPI

\* Routine boiler inspections are performed by the TYCOM SGPI. The routine boiler inspection can be done in connection with the PSOI/PSAI and the COI/CAI boiler inspections.

\*\* The Industrial Support Visit (ISV) inspection may be waived by the TYCOM for short duration availabilities.

Enclosure (3)